

REMARKS

The Examiner's Action dated October 7, 2002 has been received and its contents carefully noted. In view thereof, claim 1 has been amended in order to better define that which Applicants regard as the invention. As previously, claims 1-6 are presently pending in the instant application.

Referring now to the Official Action, and particularly page 2 thereof, Applicants note the Examiner's indication that all figures showing a cross-sectional view are improperly cross-hatched. All the cross-hatching pattern should be selected from page 600-81 of the M.P.E.P. based on material of the part. In this regard, filed concurrently herewith is a Request for Drawing Change Approval wherein figures having cross-sectional views have been changed. With respect to the cross-hatching of the resin, this cross-hatching has remained as dots for purposes of clarity. Should the Examiner feel further changes are necessary, he is hereby invited to contact counsel regarding such amendments.

Further with respect to page 2 of the Office Action, claims 1-6 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,348,726 issued to Bayan et al. This rejection is respectfully traversed in that the patent to Bayan neither discloses or remotely suggests that which is presently set forth by Applicants' claimed invention.

As the Examiner can readily appreciate, the present invention as recited in independent claim 1 is directed to a lead frame, wherein the second lead is directly connected to the frame body, and the array of the second bonding pad is between the array of the first and third bonding pad, this being a staggered arrangement. Hence, in a case where the external terminals are arranged in three rows, because the second land is directly connected to the frame body and the first land is only connected to the second land, each land is sufficiently fixed to the frame body. As a result, in the encapsulating step, any up/down movements of the lands due to the flow of resin becomes difficult, and each land is stabilized against the encapsulation resins and the connection between the lands and the wiring electrodes of the substrate is stabilized.

In rejecting Applicants claimed invention, the Examiner states that Bayan et al. includes a second lead connected to the frame body including a second bonding pad provided on an upper

surface of the second lead and a second land provided on a lower surface of the second lead. However, as the Examiner can readily appreciate that the second lead of Bayan et al. is not directly connected to the frame body as specifically recited by Applicants' claimed invention. That is, Bayan et al. teach forming contacts 224 supported by the support bars connected to the frame body 203 and forming mutually connected contacts 226, 227 and bars such as 213 and 124 (Fig. 2B) where contacts 224, 226 and 227 are provided in three rows. Moreover, as shown in Figs. 7A and 7B, the two rows of contacts on the inner side are connected in a series from the contact on the outer side towards the inner side.


While Bayan et al. disclose that the contacts are arranged in three rows, since only the contact arranged in the most outside is connected to the frame body in the encapsulating step, the contacts on the inner side are easily effected by the flow of the encapsulation resin. Therefore, Bayan et al. cannot achieve the stability which is achieved in accordance with the present invention. Moreover, even if the contact on the innermost side is directly connected to the die pad, since the die pad is formed separately from the frame body, the contact arrangement in the innermost row is not sufficiently stabilized against the flow of the encapsulation resin in the encapsulating step.

Accordingly, as noted hereinabove, the Bayan et al. reference fails to disclose or remotely suggest the second lead being directly connected to the frame body and the array of the second bonding pad being between the array of the first and third bonding pads as is specifically recited by independent claim 1 as amended. Accordingly, it is respectfully submitted that Applicants' claimed invention as set forth in independent claim 1 as well as those claims which depend therefrom is now in proper condition for allowance.

Therefore, in view of the foregoing, it is respectfully requested that the rejections of record be reconsidered and withdrawn by the Examiner, that claims 1-6 be allowed and that the application be passed to issue.

Should the Examiner believe a conference would be of benefit in expediting the prosecution of the instant application, he is hereby invited to telephone counsel to arrange such a conference.

Respectfully submitted,

A handwritten signature in cursive script, reading "Thomas W. Cole", is written over a horizontal line.

Thomas W. Cole
Reg. No. 28,290

NIXON PEABODY LLP
8180 Greensboro Drive, Suite 800
McLean, Virginia 22102
(703) 770-9300

Version with Markings to Show changes Made

1. (Amended) A lead frame, comprising:
 - a frame body made of a conductive material and including at least one opening for mounting a semiconductor chip;
 - a die pad placed in the opening of the frame body; and
 - a group of leads extending from the frame body into the opening, the group of leads including at least:
 - a first lead connected to the frame body and including a first bonding pad provided on an upper surface of the first lead and a first land provided on a lower surface of the first lead;
 - a second lead directly connected to the frame body and including a second bonding pad provided on an upper surface of the second lead and a second land provided on a lower surface of the second lead; and
 - a third lead connected to the first lead and including a third bonding pad provided on an upper surface of the third lead and a third land provided on a lower surface of the third lead,

wherein an array of the second bonding pad is between an array of the first bonding pad and an array of the third bonding pad.

wherein a connecting portion that is thinner than the lead frame body and that can be punched through is provided between the first lead and the third lead.